

Appl. No. 10/713,140
Amdt. dated April 29, 2005
Reply to Office Action of March 2, 2005

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-27. (Canceled)

28. (Original) A noise reducing apparatus that reduces noise propagating to a pair of power lines for power supply, comprising:

a leakage current detecting section that detects current induced by an output winding of a transformer having the output winding passing through a magnetic core with the power lines, thereby detecting a leakage current caused by noise flowing into a ground line from the power lines; and

a current supplying section that supplies a compensation current for canceling the leakage current to the injection point which is on the ground line closer to an input of the power lines than a leakage current detecting point, wherein the current supplying section uses the leakage current detected by said leakage current detecting section as the compensation current.

29. (Original) The noise reducing apparatus according to claim 28, wherein the power lines and the output winding pass through the magnetic core only one time, respectively.

30. (Original) The noise reducing apparatus according to claim 28, wherein the magnetic core of the transformer has a shape dividable into a plurality of portions and the divided portions are combinable, thereby allowing the power lines to be passed through the magnetic core without cutting the power lines.

31. (Original) The noise reducing apparatus according to claim 28, wherein the transformer induces current having a current value equal to a zero-phase current of the power lines to the output winding.

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32. (Original) The noise reducing apparatus according to claim 28, wherein said current supplying section includes an amplifying circuit that amplifies the leakage current detected by said leakage current detecting section, and said amplifying circuit amplifies current to be supplied to the ground line with an amplitude set to 1, when power is supplied from a predetermined DC power source.

33. (Original) The noise reducing apparatus according to claim 32, wherein said amplifying circuit includes an NPN transistor, a PNP transistor and a capacitor, a collector of said NPN transistor is connected to a positive pole of a DC power source, an emitter of said PNP transistor is connected to an emitter of said NPN transistor, a collector of said PNP transistor is connected to a negative pole of the DC power source, one output terminal of said leakage current detecting section is connected to a base of said NPN transistor and a base of said PNP transistor, the other output terminal of said leakage current detecting section is connected to the emitter of said NPN transistor and the emitter of said PNP transistor, and said capacitor is connected between the ground line and the bases of said NPN transistor and said PNP transistor.

34. (Original) The noise reducing apparatus according to claim 32, wherein said amplifying circuit is an amplifying circuit connected to a secondary winding of a transformer with a primary winding and a secondary winding, said amplifying circuit includes a current amplifying section that amplifies current flowing into the secondary winding of the transformer to output via a first impedance element; and a buffer amplifying section that applies voltage corresponding to voltage applied to the first impedance element by said current amplifying section to a second impedance element to output current from the second impedance element, current corresponding to current obtained by amplifying current flowing into the primary winding of the transformer is output from each of the first impedance element and the second impedance element at a ratio determined by an impedance ratio between the first impedance element and the second impedance element.

35. (Original) The noise reducing apparatus according to claim 32, wherein said amplifying circuit includes an NPN-type bipolar transistor having an emitter connected to

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one end of a secondary winding of a transformer with a primary winding and the secondary winding, a collector connected to a positive pole of a DC power source, a first resistor connected between the collector of the NPN-type bipolar transistor and a base of the NPN-type bipolar transistor, a first voltage drop element connected between the base of said NPN-type bipolar transistor and the other end of the secondary winding of the transformer to generate a voltage drop corresponding to a base-emitter voltage of said NPN-type bipolar transistor, a PNP-type bipolar transistor having an emitter connected to one end of the secondary winding of the transformer, a collector connected to a negative pole of the DC power source, and a second resistor connected between the collector of the PNP-type bipolar transistor and the base of the PNP-type bipolar transistor; a second voltage drop element connected between the base of said PNP-type bipolar transistor and the other end of the secondary winding of the transformer to generate a voltage drop corresponding to a base-emitter voltage of said PNP-type bipolar transistor; and a current supply capacitor having one end connected to a node between said first voltage drop element and said second voltage drop element, and current flowing into the primary winding of the transformer is amplified and the amplified current is output via said current supply capacitor.

36-37. (Canceled)

38. (Original) A power converting apparatus comprising:
a power converting section that converts power supplied from a power source into power with a predetermined voltage to supply to a load; and
the noise reducing apparatus described in claim 28 that reduces noise propagating to a pair of power lines for power supply from the power source to said power converting section.

39. (Original) The power converting apparatus according to claim 38, wherein said power converting section includes a transformer, and the transformer further includes an auxiliary winding that forms a DC power source for supplying power to the current supplying section that said noise reducing apparatus includes.

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40. (Original) The power converting apparatus according to claim 38, wherein said power converting section includes an inverter circuit and a control circuit that controls the inverter circuit, and an operating power source for said control circuit, and the operating power source is used as a DC power source for supplying power to the current supplying section that said noise reducing apparatus includes.